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AUTHOR Newman, Ian M.; And Others
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ABSTRACT

During the 1983-1986 academic years, the Nebraska Prevention Center for Alcohol and Drug Abuse cooperated with the Omaha Public Schools to assess the effects of the videotape-based educational program "Resisting Pressures to Drink and Drive. " The effects of the program on two cohorts of 9th-grade students, one which participated through their Social Studies classes, and another which participated in their English classes, were compared and analyzed. The first analysis completes the second year evaluation of student learning in the experimental English classes, the second compares student learning and alcohol related behavior of the English (N=48) and Social Studies (N=51) experimental classes. The results of the Social Studies implementation show that the knowledge scores for those who had participated in the curriculum were significantly higher than for those who had not, at both post-test and follow-up. There was not significant difference between the group's self-reported riding with a drinking driver. Results for the experimental group in the English cohort showed that: (1) curriculum significantly increased knowledge measures; and (2) riding with a drinking driver for students in the experimental group did not decrease. The number of students who had ridden with a drinking driver in the last 30 days increased for both the English and the social studies groups. To conduct the same kind of long-term evaluation as for the Social Studies classes, the 1 year follow-up results of the first English experimental group are compared with the 1 year follow-up measurements of the Social Studies control group. (LLL)

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TEACHING STUDENTS TO RESIST PRESSURES TO DRINK AND DRIVE

SUMMARY EVALUATION 1984-1986

Ian M. Newman, Ph.D.
Carolyn S. Anderson, M.A.
Patricia Mohr, Ph.D.

Nebraska Prevention Center for Alcohol and Drug Abuse
University of Nebraska-Lincoln
Lincoln, NE 68588

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Ian M. Newman, Ph.D.

Director

Nebraska Prevention Center

for Alcohol and Drug Abuse

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TEACHING STUDENTS TO RESIST PRESSURES TO DRINK AND DRIVE

SUMMARY EVALUATION 1984-1986

INTRODUCTION

During the 1983-1986 academic years, the Nebraska Prevention Center for Alcohol and Drug Abuse cooperated with the Omaha Public Schools to assess the effects of the videotape-based educational program **Resisting Pressures to Drink and Drive.** This report completes the analyses and compares the effects of the program on two cohorts of ninth grade students, one cohort which participated in the program in their social studies classes and another cohort, which participated a year later in their English classes. The theoretical framework on which the program was based, as well as descriptions of the rationale and development of the program are published in Technical Reports 14 and 17. First and second year evaluations of the social studies classroom implementation are reported in Technical Reports 14 and 16; the first year evaluation of the English classroom implementation is reported in Technical Report 17. These documents can be obtained from the Nebraska Prevention Center for Alcohol and Drug Abuse at the University of Nebraska Lincoln.

This report is divided into two sections: The first completes the second year evaluation of student learning in the experimental English classes, the second compares student learning and alcohol related behavior of the English and Social Studies experimental classes.

SUCCESSFUL IMPLEMENTATIONS OF THE PROGRAM

The first experimental cohort of ninth graders was taught the curriculum in social studies classes in the spring of 1984. This experimental group of students was compared with a control group of ninth grade students on tests which assessed knowledge about alcohol and alcohol use. Evaluation data were gathered at pretest, prior to the program; at post-test, immediately following; and a follow-up approximately one year later in the spring of 1985.

The results of these comparisons are presented in the Prevention Center's Technical Report 14, which reported differences between the social studies experimental and control groups after the post-test, and Technical Report 16, which reported continuing differences after the one-year follow-up.

Briefly, the results for the social studies implementation show that the knowledge scores for those who had participated in the curriculum implementation were significantly higher than for those who had not, at both post-test and follow-up. There was also a significant difference between the groups self-reported riding with a drinking driver. The experimental group reported riding less often on average than the control group. This evaluation used the classroom as the unit of analysis. These aggregated data did not show any significant difference between the experimental and the control groups in terms of the frequency or amount of drinking. Technical Report 19 will examine the effects of the program on individual students.

The second cohort of students was administered the curriculum in the fall of 1984 in their English classes. Since the curriculum involved students in a good deal of class interaction, communication skills, and role-playing as part of the learning process, it was hypothesized that students taught by teachers who traditionally emphasize speech and communication skills might be especially effective in presenting the curriculum and helping students to learn and practice resistance skills. Results for the experimental group in this cohort were compared with a control group and the results are presented in Technical Report 17. This evaluation included pre- and post-tests with no follow-up measures. Results show the curriculum significantly increased knowledge measures and decreased riding with a drinking driver for students in the experimental group.

Noting the positive curriculum effects, it was deemed inappropriate to withhold the curriculum from the English control group; therefore, the control group also was taught from the curriculum the next semester, in the spring of 1985. A follow-up was subsequently administered to both groups of English students in the spring of 1986 but there was no longer a control group. To conduct the same kind of long-term evaluation that had been made for the Social Studies classes (see Technical Report 16) the one year follow-up results of the first English experimental group are here compared with the one year follow-up measurements of the knowledge and behavior of the social studies control group. Section One of this report summarizes these comparisons. Section Two of this report compares relative effectiveness of the English vs. the Social Studies classrooms as sites for the educational program.

SECTION ONE

ONE YEAR FOLLOW-UP, ENGLISH CLASSES

Introduction

The use of Social Studies Control Group to evaluate the success of the program in the English classes was dictated by the fact that the English Class Control Group was lost to follow-up after the immediate posttest. Because of the positive results of the previous year's trial of the curriculum with the social studies classes, it was deemed unethical to withhold a potentially effective program from half the ninth grade English classes. The design for the evaluation of the social studies classes involved comparisons between experimental and control students immediately before participation in the curriculum, immediately after and approximately one year later.

For the social studies classes, these assessments occurred early in the spring semester, mid-spring semester, and one year later. For the English classes, the assessment was spread over a longer period of time. Pretests occurred earlier in the fall semester with posttest mid-fall and follow-up assessments not until the spring semester of the following school year. We acknowledge that at least two aspects of this situation could confound this evaluation of students enrolled in the English classes: (1) the social studies controls were measured one year earlier, and thus were not true grade-level peers of the English experimental students; (2) the social studies controls' knowledge and behavior at posttest and follow-up were measured very nearly one year apart, while the English experimental students' knowledge and behavior at posttest and follow-up were measured one year and at least four months apart. Since the data have shown that both groups' knowledge and behavior are significantly affected by the passage of time, or maturation, this additional four months could be expected to affect levels of learning (with a decay or regression on the part of the experimental group over time) and levels of alcohol usage (with an increase in numbers of students who had initiated

drinking, as well as increased frequency and amount of drinking on the part of the experimental group over time). Therefore, we were particularly interested to note results which indicate significant differences between the two groups, despite the time disadvantages to the experimental group.

Total Knowledge Scale Scores

First, the overall learning achievement and retention of the experimental group was measured. At each testing time, the evaluation instrument consisted of a paper and pencil test of forty items. Twenty-seven items measured learning of curriculum information, and correct answers to these were added to give a measure of the degree to which classes mastered the information presented. The internal consistency or reliability of this scale was measured at an alpha level of .684 at the pretest, and .931 at the posttest and .870 at the follow-up.

Other items on the evaluation instrument gathered information on demographic characteristics, alcohol-related behavior and students' perceptions of their abilities to resist pressures.

The means and standard deviations of the experimental and control groups on the Total Knowledge Scale at the three points in time are shown in Table 1. Mean scores of both groups rose significantly over time, showing that some information was gained due to maturation and other factors not directly related to the curriculum. However, the results of the aggregated repeated measures ANOVA (Table 2) show that the experimental group's increase was significantly greater than that of the control group ($p > .0001$). In Table 2 the significance of the results for "Time," indicates that both groups' knowledge increased as time passed, regardless of whether students received the curriculum or not. The significance of the results for "T x C" indicates that being in the experimental group meant greater knowledge gained over time.

Table 1
Effects of Curriculum
Total Knowledge of Curriculum Material
Aggregated Means and Standard Deviations

	English Experimental Group		Social Studies Control Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	13.21	1.18	12.90	.89
Posttest	18.71	1.56	13.83	.05
Follow-up	17.98	1.29	15.22	.87
	N=48		N=36	

Table 2
Effects of Curriculum
Results of Aggregated Repeated Measures Analysis
Total Knowledge of Curriculum

Source	df	ms	f	prob.
Between:				
Condition (C)	1	433.5290	126.21	.0000
Error	82	3.4350		
Within:				
Time (T)	2	315.4250	750.40	.0000*
T x C	2	107.2692	255.20	.0000*
Error	164	.4203		

*p < .0001

It is this indicator which suggests that the curriculum had an important effect, even at follow-up. When compared with the control group, the English classes, like the social studies experimental classes (Technical Report 16), had maintained significantly higher levels of total knowledge over a year later.

Specific Knowledge Scales

Three separate knowledge scales were developed using items from the test instrument: (1) knowledge of the physiological effects of alcohol; (2) knowledge to refute common myths about alcohol; and (3) knowledge of specific strategies to resist pressures to drink or accompany a driver who had been drinking.

Physiological Effects of Alcohol

Eleven items measured the knowledge of the physiological effects of alcohol. The reliability of this scale was measured at an alpha level of .634 for the pretest, .871 for the posttest, and .759 for the follow-up. The means and standard deviations for the experimental and control groups for the three tests are shown in Table 3. The results of the aggregated repeated measures ANOVA are shown in Table 4.

The results for "Time" indicate that both groups' knowledge of the physiological effects of alcohol increased significantly as they matured. "T x C" measures the interaction between time and the experimental condition and shows that the English students who received the curriculum learned it, and displayed significantly greater knowledge of the physiological facts of alcohol use than the control group at the follow-up ($p < .0001$).

Alcohol Myths

The curriculum also appeared to correct students' understanding of common myths about alcohol. The reliability, or internal consistency of the seven-item scale shows an alpha of .289 at the pretest, .833 at posttest, and .755 at the follow-up. Examination of the means and standard deviations

Table 3
Effects of Curriculum
Knowledge of Physiological Effects of Alcohol
Aggregated Means and Standard Deviations

	English Experimental Group		Social Studies Control Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	5.25	.67	5.31	.54
Posttest	7.84	.73	5.65	.62
Follow-up	7.68	.71	6.49	.54
	N=48		N=36	

Table 4
Effects of Curriculum
Results of Aggregated Repeated Measures Analysis
Knowledge of Physiological Effects of Alcohol

Source	df	ms	f	prob.
Between:				
Condition (C)	1	75.2452	76.03	.0000
Error	82	.9897		
Within:				
Time (T)	2	75.6092	560.21	.0000*
T x C	2	26.4441	195.93	.0000*
Error	164	.1350		

*p < .0001

(Table 5) and results of the repeated measures ANOVA (Table 6) show that here again, although both groups were more knowledgeable about widespread myths about alcohol as time passed, the group which received the curriculum made significantly greater gains in knowledge about myths between the pretest and the posttest, compared to the control group ($p > .0001$).

Table 5
Knowledge of Myths About Alcohol
Aggregated Means and Standard Deviations

	English Experimental Group		Social Studies Control Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	2.60	.37	2.60	.31
Posttest	4.59	.41	2.86	.35
Followup	4.38	.35	3.30	.36
	N=48		N=36	

Table 6
Effects of Curriculum
Knowledge of Myths About Alcohol
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Condition (C)	1	52.9910	210.56	.0000
Error	82	.2517		
Within:				
Time (T)	2	37.7103	512.12	.0000*
T x C	2	16.2403	220.55	.0000*
Error	164	.0736		

*p < .0001

Strategies to Resist Pressures

New in this curriculum was the objective to teach specific resistance strategies. An eight-item scale was used to estimate knowledge about specific resistance skills. The scale's reliability was measured at pretest with an alpha of .368, at posttest an alpha of .785 and at the follow-up an alpha of .617. Table 7 shows the means and standard deviations and Table 8 the

results of the repeated measures ANOVA. All students' knowledge of strategies to resist pressures to use alcohol increased over time, but the students taught the curriculum again made significantly greater gains in their knowledge of ways to resist pressures than the control group ($p < .0001$).

Perceived Ability to Resist Pressures

Ultimately, knowledge of a resistance strategy is of little value unless that strategy is carried out. It was hoped that the curriculum, in addition to increasing the number of students who knew actual resistance strategies, would also increase students' perception of their own abilities to use these skills.

Students' perception of their own ability to resist pressures to drink or ride with a drinking driver was measured with a five-item scale with a pretest alpha of .687, a posttest alpha of .785, and a follow-up alpha of .666. The means and standard deviations (Table 9) and the repeated measures ANOVA (Table 10) suggest that the level of both groups' faith in their own abilities to withstand pressure increased over time.

Although the experimental group's perceived ability increased more than the control group's scores, this difference was significant only at a probability greater than .05, rather than greater than .0001 as was recorded for the other scales.

Table 7
Effects of Curriculum
Knowledge of Strategies for Resisting Pressure
Aggregated Means and Standard Deviations

	English Experimental Group		Social Studies Control Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	4.33	.48	4.19	.33
Posttest	5.62	.63	4.56	.41
Followup	5.42	.49	4.77	.35
	N=48		N=36	

Table 8
Effects of Curriculum
Knowledge of Strategies for Resisting Pressures
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Condition (C)	1	23.4688	45.53	.0000
Error	82	.5154		
Within:				
Time (T)	2	19.0868	251.44	.0000*
T x C	2	4.4239	58.28	.0000*
Error	164	.0759		

*p < .0001

Table 9
Perceived Ability to Resist Pressures to Drink or To Ride with a Drinking Driver
Means and Standard Deviations

	English Experimental Group		Social Studies Control Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	18.99	.97	18.75	1.02
Posttest	20.11	.91	19.23	.92
Followup	20.42	.90	20.16	.87
	N=48		N=36	

Table 10
Effects of Curriculum on Perceived Ability to Resist Pressures to Drink or Ride with a Drinking Driver
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Condition (C)	1	13.1654	7.54	.0074
Error	82	1.7450		
Within:				
Time (T)	2	41.6414	95.87	.0000*
T x C	2	2.6635	6.13	.0027*
Error	164	.4344		

*p < .05

Behavior

Several items on the test measured self-reported drinking behavior and riding with a drinking driver. While affecting the real life behavior of students is not often the stated goal of most public school curricula, it was

nonetheless hoped that knowledge of the physiological facts of alcohol use, myths, and knowledge of resistance strategies would influence students' self-reported behavior regarding alcohol.

Drinking

One item asked whether students had ever consumed an entire glass of beer, wine, or liquor. Two items inquired about alcohol used in the last 30 days and at the last "party." These items were used to measure current drinking behavior. Percentages/means are reported in Table 11.

Between the pretest and the follow-up, there was an increase in the percentage of students in both groups who had ever consumed at least one glass of alcohol (Table 11). Students within both groups reported more frequent consumption of alcohol within the last thirty days; the increase is an average of 1.34 times for the experimental group and 1.81 times for the control group. However, there were no significant differences in these increases in self-reported alcohol consumption between the experimental group and the control group and thus the ANOVAS are not included here.

Riding with Drinking Drivers

Finally, one item asked students to report times in the last 30 days when they rode in a car with a driver who had been drinking alcohol. The means and standard deviations at pretest, posttest, and follow-up in Table 12 show that the number of students who had ridden with a drinking driver in the last 30 days had increased for both the experimental and control groups. The experimental group increased an average of .16 times; the control group an average of .97 times. These differences are significant at the .01 level.

Table 11
Changes in Drinking Behavior Pretest to Follow-up
Aggregated

	English Classes Experimental Group	Social Studies Control Group
Having consumed at least one glass of alcohol		
Pretest	62.8%	68.5%
Posttest	68.1%	70.5%
Follow-up	82.1%	81.3%
Average number of times drinking within last month		
Pretest	1.91	1.87
Posttest	2.15	2.47
Follow-up	3.24	3.44
Average number of drinks consumed at last party		
Pretest	1.82	1.90
Posttest	1.91	2.11
Follow-up	2.59	2.62
	N=48	N=36

The repeated measures ANOVA (Table 13) shows that the English classes which participated in the alcohol curriculum program reported significantly fewer occasions of riding with a drinking driver than the control group. ($p > .01$). This result parallels the findings on the results on the curriculum taught by the social studies teachers (Technical Report 14), in which students in the experimental group also reported significantly fewer experiences of riding with a drinking driver than the control group.

Table 12
Times Riding with Drinking Driver, Last 30 Days
Aggregated Means and Standard Deviation

	English Classes Experimental Group		Social Studies Control Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	1.09	.70	1.01	.63
Posttest	1.10	.94	1.34	.62
Follow-up	1.26	1.71	1.98	1.09
	N=48		N=36	

Table 13
Effects of Curriculum
Riding with Drinking Driver Behavior
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Condition (C)	1	5.2765	5.23	.0248
Error	82	1.0086		
Within:				
Time (T)	2	7.0065	15.36	.0000
T x C	2	3.3407	7.32	.0009*
Error	164	.4562		

*p > .01

Summary of Section One

This section of this report has presented findings for the English classes who participated in the program entitled **Teaching Students to Resist Pressures to Drink and Drive** which are very similar to findings for the social studies classes who had participated in the same program a year earlier. Both

experimental groups scored significantly higher than control groups on basic knowledge as measured by posttests administered immediately following the program and at follow-up one year later.

The English classes, like the social studies classes, reported significantly less increase than the control group in number of times in the previous 30 days of riding with a drinking driver. Also like the social studies classes, neither the increase in frequency of drinking nor the increase in amount of drinking of the English classes was significantly less than the increase of the control group. It is important to note that curricula based on the principle of educational immunization, as this one was, are not expected necessarily to produce immediate changes in behavior. Rather, through an increase in knowledge and skills, gradual mediation and change in behavior over the longer term is anticipated. However, the suggested changes in riding with drinking drivers was especially encouraging.

Section Two of this report will compare the effectiveness of the curriculum taught in English classes compared to the effectiveness of the curriculum taught in social studies classes.

SECTION TWO

COMPARISON OF CURRICULUM WHEN TAUGHT IN ENGLISH AND SOCIAL STUDIES CLASSES

Introduction

Initially, social studies classes were selected as the site for the presentation and teaching of the curriculum. After the first year, given the purpose and methodologies of the curriculum and its emphasis on teaching the communication of resistance to pressure to use alcohol, it was hypothesized that the traditionally greater emphasis of English classes on teaching communication skills, and the concomitant additional training and skill of English teachers in these areas, would result in greater learning on the part of students. Therefore, in the second year, the program was implemented in the English classes. This section of our report compares the learning and change or lack of change in behavior of the social studies and English experimental groups. We were interested in which type of class, if either, provided the more effective milieu for learning of this nature.

The discussion of results in this section follows the format of previous reports comparing experimental and control groups. Comparison of pretest to posttest results and posttest to follow-up test results are made separately in each of the substantive areas: total knowledge, physiological facts of alcohol use, myths, and resistance strategies. Comparison of pretest to posttest results measures the learning of each experimental group--the social studies classes and the English classes. Comparisons of the groups at follow-up were also made. These comparisons, while generally also valid measures, may have been affected by the length of time between posttest and follow-up which varied for the two groups.

There was an impact of time noted in all previous reports on both learning and behavior variables tracked over the research period, in which there tended to be some decay in learning and "natural" increase in all measures of alcohol-related behavior within both the control and experimental groups. Given this situation, the follow-up measures may not provide as accurate evaluations as the posttest measures of the effectiveness of the classroom site. For example, the English classes' learning would be subject to more decay than the social studies classes', and their alcohol-related behavior subject to more "natural" increase since more time had elapsed between posttest and follow-up.

With these differences in mind, we now compare the two groups' achievement and behavior on the same measures used in Technical Reports 14, 16, and 17 and Section One of this report.

Total Knowledge Scale Scores

First, determination was made of the overall learning achievement and retention via a scale of total knowledge for both experimental groups. At each testing time, the evaluation instrument consisted of a paper and pencil test of forty items. Twenty-seven items measured learning of curriculum information, and correct answers to these items were added to give a measure of the degree to which classes mastered the information presented. The internal consistency or reliability of this scale was measured at an alpha level of .667 at the pretest, .840 at the posttest, and .762 at the followup.

The means and standard deviations of the experimental and control groups on the Total Knowledge Scale at the three points in time are shown in Table 14. Scores of both groups went up over time, and each group had gained significantly in knowledge over their respective control groups (Technical Reports 14, 16, 17 and Section One, above).

Table 14
Effects of Curriculum
Total Knowledge of Curriculum Material
Aggregated Means and Standard Deviations

	English Classes Experimental Group		Social Studies Control Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	13.21	1.18	13.52	.91
Posttest	18.71	1.56	17.37	1.42
Followup	17.98	1.29	17.71	1.11
	N=48		N=51	

The results of an aggregated repeated measures ANOVA (Table 15) show that the English classes' increase was significantly greater than that of the social studies classes at the posttest ($p > .0001$) and results of a similar ANOVA (Table 16) at the follow-up show that this difference was also significant then ($p > .0001$). The English classes learned more than the social studies classes, overall, although this difference was more pronounced in some areas than others, as noted in the changes in mean scores reported on the separate scales discussed below.

Table 15
Effects of Curriculum Pretest to Posttest
Results of Aggregated Repeated Measures Analysis
Total Knowledge of Curriculum

Source	df	ms	f	prob.
Between:				
Class (C)	1	12.6077	4.69	.0328
Error	97	2.6888		
Within:				
Time (T)	1	1120.7855	1247.70	.0000
T x C	1	30.4198	33.86	.0000*
Error	97	.8983		

*p < .0001

Table 16
Effects of Curriculum Pretest to Follow-up
Results of Aggregated Repeated Measures Analysis
Total Knowledge of Curriculum

Source	df	ms	f	prob.
Between:				
Class (C)	1	13.7074	3.67	.0582
Error	97	3.7301		
Within:				
Time (T)	2	692.1931	1330.16	.0000*
T x C	2	17.0822	32.83	.0000*
Error	194	.5204		

*p < .0001

Specific Knowledge Scales

Three separate knowledge scales were developed from various items in the test instrument: (1) knowledge of the physiological effects of alcohol; (2) knowledge to refute the common myths about alcohol; and (3) knowledge of specific strategies to resist pressures to drink or accompany a driver who had been drinking. Students' knowledge of these three areas was measured immediately before the curriculum was taught and immediately afterward, and at the follow-up approximately one year later for the social studies classes and one year and four months later for the English classes. We now compare the achievement of the two experimental groups on these separate scales.

Physiological Effects of Alcohol

Eleven items dealt with knowledge of the physiological effects of alcohol. The reliability of this scale was measured at an alpha level of .680 for the pretest, .661 for the posttest, and .694 for the follow-up. The means and standard deviations for the English and social studies experimental groups for the three tests are shown in Table 17. The results of the aggregated repeated measures ANOVA at posttest and follow-up are shown in Tables 18 and 19.

The significance of the results for "T x C," which measures an interaction between time and the type of classroom, indicates that the English students who received the curriculum learned it better, displaying significantly greater learning than the social studies students at both posttest (Table 18) and follow-up (Table 19) ($p < .0001$).

Table 17
Effects of Curriculum Pretest to Posttest
Results of Aggregated Repeated Measures Analysis
Knowledge of Physiological Effects of Alcohol

	English Classes Experimental Group		Social Studies Experimental Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	5.25	.67	5.69	.63
Posttest	7.84	.73	7.68	.74
Followup	7.68	.71	7.70	.58
	N=48		N=51	

Table 18
Effects of Curriculum Pretest to Posttest
Results of Aggregated Repeated Measures Analysis
Knowledge of Physiological Effects of Alcohol

Source	df	ms	f	prob.
Between:				
Class (C)	1	.6822	.84	.3603
Error	98	.8075		
Within:				
Time (T)	1	269.9725	963.22	.0000
T x C	1	3.6478	13.01	.0005*
Error	98	.2803		

*p < .01

Table 19
Effects of Curriculum Pretest to Follow-up
Results of Aggregated Repeated Measures Analysis
Knowledge of Physiological Effects of Alcohol

Source	df	ms	f	prob.
Between:				
Class (C)	1	.7514	.72	.3989
Error	97			
Within:				
Time (T)	2	168.1857	1018.62	.0000*
T x C	2	2.3613	14.30	.0000*
Error	194	.1651		

*p < .0001

Alcohol Myths

The curriculum was effective in expanding both groups of students' understanding of common myths about alcohol, for both groups had scored significantly better than their control groups on this scale (see Technical Reports 14, 16, 17, and Section One of this report). The reliability, or internal consistency of the seven-item scale for the English and Social Studies experimental groups shows an alpha of .454 at the pretest, .403 at the posttest, and .273 at the follow-up. Examination of the means and standard deviations (Table 20) and the results of the repeated measures ANOVA (Tables 21 and 22) show that here again, although both groups were more knowledgeable about widespread myths about alcohol at posttest and follow-up, the English classes made significant gains ($p < .0001$) in knowledge about myths over the social studies classes between the pretest and the posttest (Table 21) and between the pretest and the follow-up (Table 22).

Table 20
Knowledge of Myths About Alcohol Pretest to Follow-up
Aggregated Means and Standard Deviations

	English Classes Experimental Group		Social Studies Experimental Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	2.60	.37	2.90	.49
Posttest	4.59	.41	4.35	.48
Follow-up	4.38	.35	4.30	.43
	N=48		N=51	

Table 21
Effects of Curriculum Pretest to Posttest
Knowledge of Myths About Alcohol
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Class (C)	1	.0518	.20	.6554
Error	97	.2585		
Within:				
Time (T)	1	149.5254	1084.50	.0000*
T x C	1	3.6113	26.19	.0000*
Error	97	.1379		

*p < .0001

Table 22
Effects of Curriculum Pretest to Follow-up
Knowledge of Myths About Alcohol
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Class (C)	1	.0016	0.00	.9456
Error	97	.3432		
Within:				
Time (T)	2	92.5556	882.23	.0000*
T x C	2	1.9073	18.18	.0000*
Error	194	.1049		

*p < .0001

Strategies to Resist Pressures

New in the curriculum was the objective to teach specific resistance strategies. An eight-item scale was used to estimate knowledge about specific resistance skills. The scale's reliability was measured for these two groups at pretest with an alpha of .368, at posttest an alpha of .785 and at the follow-up an alpha of .521. The means and standard deviations (Table 23) show that both groups of students' knowledge of resistance strategies increased. As noted in previous reports (Technical Reports 14, 16, 17 and Section One of the present report), their learning was significantly greater than their control groups.

However, according to the results of the repeated measures ANOVA (Table 24) the English students made significantly greater gains than the social studies students in their knowledge of ways to resist pressures ($p < .0001$) when the results of the two groups are compared at the posttests. By the time of the follow-ups, the English class scores had begun to regress somewhat; those of the social studies classes had not. Even so, the English class

scores remained significantly above those of the social studies class scores, although at the .01 rather than at the .0001 level, as was the case with the other scale scores evaluated above. (See Table 25 for the results of the repeated measures ANOVA on the follow-up.)

Table 23
Effects of Curriculum
Knowledge of Strategies for Resisting Pressure
Aggregated Means and Standard Deviations

	English Classes Experimental Group		Social Studies Experimental Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	4.33	.48	4.31	.36
Posttest	5.62	.63	5.24	.47
Followup	5.42	.49	5.31	.39
	N=48		N=51	

Table 24
Effects of Curriculum Pretest to Posttest
Knowledge of Strategies for Resisting Pressure
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Class (C)	1	2.0779	5.44	.0217
Error	97	.0493		
Within:				
Time (T)	2	63.2149	542.10	.0000
T x C	2	1.4644	12.56	.0006*
Error	194	.1166		

*p < .01

Table 25
Effects of Curriculum Pretest to Followup
Knowledge of Strategies for Resisting Pressure
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Class (C)	1	2.090	4.24	.0000
Error	97	0.493		
Within:				
Time (T)	2	38.432	419.06	.0000
T x C	2	.937	10.22	.0001*
Error	194	.092		

*p < .01

Perceived Ability to Resist Pressures

Ultimately, knowledge of a resistance strategy is of little value unless that strategy is carried out. It was hoped that the curriculum, in addition to increasing the number of students who knew actual resistance strategies, would also increase students' perception of their own abilities to use these skills.

Students' perception of their own ability to resist pressures to drink or ride with a drinking driver was measured with a five-item scale with a pretest alpha of .695, a posttest alpha of .745 and follow-up alpha of .710. The means and standard deviations (Table 26) show that the level of both groups' faith in their own abilities to withstand pressure increased over time, and we know that these increases were significant over those of their control groups (see Technical Reports, 14, 16, 17 and Section One of this report). The English classes scores increased more than the social studies classes' scores pretest to posttest, but this was not significant. By the time of the follow-up neither groups' scores had decreased, although the social studies classes'

overall increase was greater than that of the English classes. This difference was not significant. (See the results of the repeated measures analyses in Tables 27 and 28.) Thus, in regard to self-perceptions about ability to resist drinking or riding with a drinking driver, we cannot report significant differences between the two classroom types.

Table 26
Perceived Ability to Resist Pressures to Drink or to Ride with a Drinking Driver
Means and Standard Deviations

	English Classes Experimental Group		Social Studies Experimental Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	18.99	.97	18.56	1.06
Posttest	20.11	.91	19.56	1.06
Followup	20.42	.90	20.28	.84
	N=48		N=51	

Table 27
Effects of Curriculum Pretest to Posttest
On Perceived Ability to Resist Pressures
To Drink or to Ride with a Drinking Driver
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Class (C)	1	11.8848	7.77	.0064
Error	97	1.5300		
Within:				
Time (T)	1	55.6057	113.51	.0000
T x C	1	.1710	.35	.5560*
Error	97	.4899		

*Not significant at the .05 criterion

Table 28
Effects of Curriculum Pretest to Followup
On Perceived Ability to Resist Pressures
To Drink or to Ride with a Drinking Driver
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Class (C)	1	10.2993	5.83	.0177
Error	97	1.7680		
Within:				
Time (T)	2	63.8036	126.46	.0000
T x C	2	1.1116	2.20	.1145*
Error	194	0.5045		

*Not significant at the .05 criterion

Behavior

While affecting the behavior of students is not often the stated goal of most public school curricula (teachers of history, social studies, English, algebra and the like are not held accountable for students' behavior, but for the amount of knowledge their students acquire) it was nonetheless hoped that knowledge of the physiological facts, awareness of alcohol-related myths, and knowledge of resistance strategies would influence students' self-reported behavior regarding alcohol.

When the experimental groups were compared with the control groups (see discussions in Technical Reports 14, 16, 17 and Section One of this report), no significant differences were found in regard to frequency or amount of drinking. However, these reports show there were differences between both experimental groups and control groups on the frequency of riding with a drinking driver. Both experimental groups and control groups reported increases in this dangerous activity, but the experimental groups increases were significantly less than the control groups. We now discuss differences in behavioral outcomes between the two experimental groups.

Drinking

Several items on the test instrument were used to measure self-reported drinking behavior. One item asked whether students had ever consumed an entire glass of beer, wine, or liquor. Two other items inquired about alcohol used in the last 30 days and at the last "party." These items were used as estimates of current drinking behavior. Percentages and aggregated means are reported in Table 29.

As noted in Technical Reports 14, 16, 17, between the pretest and the posttest, as well as between the posttest and the follow-up, there was an increase in the percentage of all students who had ever consumed at least one glass of alcohol, regardless of experimental or control group, social studies or English classes. Students within all groups also reported more frequent

consumption of alcohol within the last thirty days, as well as having more to drink at the last party they attended. There were no significant differences in these increases between the experimental and control groups discussed in past reports.

Table 29
Changes in Drinking Behavior Pretest to Follow-up
Aggregated

	English Classes Experimental Group	Social Studies Experimental Group
	Percentage Reporting	
Having consumed at least one glass of alcohol		
Pretest	62.8%	64.9
Posttest	68.1%	68.0
Follow-up	82.1%	79.2
Average Number of times drinking within last month		
Pretest	1.91	1.63
Posttest	2.15	2.34
Follow-up	3.24	3.06
Average number of drinks consumed at last party		
Pretest	1.83	1.64
Posttest	1.91	1.86
Follow-up	2.59	2.50
	N=48	N=51

Although there was no significant difference between experimental and control groups, however, in regard to frequency of drinking in the last month there is a significant difference between the English and social studies classes at the posttest. The means reported in Table 29 and the repeated measures ANOVA in Table 30 show that at posttest the increase in self-reported frequency of alcohol consumption for the English experimental group was

significantly less than the social studies experimental group ($p > .05$). The increase for the English classes averaged .15 pretest to posttest; the increase for the social studies classes averaged .72. The difference pretest to follow-up was not as marked: 1.24 times for the English classes and 1.43 times for the social studies classes. This was significant at the .06 level. Given the extended time period between the English classes posttest and followup, we report this difference in Table 31.

There were no significant differences in onset of drinking or in amount consumed at the last party between the two experimental groups.

These summary findings imply a strong trend for adolescents toward beginning to drink, and after the onset to continue to drink more frequently and heavily, as a more or less inevitable process of their development. What they do not show is the tentative nature of the process, with individuals' drinking careers, often characterized according to these data by periods in which drinking levels off and even decreases, as well as by periods of increase. We will discuss the empirical process and the implications for prevention-oriented curricula in Technical Report 19.

Table 30
Effects of Curriculum Pretest to Posttest
Frequency of Drinking in the Last 30 Days
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Class (C)	1	.1063	.06	.8074
Error	97	172.4922		
Within:				
Time (T)	1	11.1282	28.07	.0000
T x C	1	2.7023	6.82	.0105*
Error	97	.3964		

*p > .05

Table 31
Effects of Curriculum Pretest to Follow-up
Frequency of Drinking in the Last 30 Days
Results of Aggregated Repeated Measures Analysis

Source	df	ms	f	prob.
Between:				
Class (C)	1	.6406	.24	.6263
Error	97	2.6853		
Within:				
Time (T)	2	48.8538	94.31	.0000
T x C	2	1.5120	2.92	.0564*
Error	194	.5180		

*p > .06

Riding with Drinking Drivers

Finally, one item asked students to report occasions in the last 30 days when they rode in a car with a driver who had been drinking alcohol. The means and standard deviations at pretest and posttest are shown in Table 32, and indicate that the number of students who had ridden with a drinking driver in the last 30 days had increased for both the English and the social studies experimental groups. These increases were not significantly different; from pretest to posttest the English classes increased .01 times on average; the social studies classes .04. From post-test to follow-up the English classes increased .17 times; the social studies classes .23 times. The results of repeated measures ANOVA will not be shown, since they were insignificant.

Table 32
Times Riding with Drinking Driver, Last 30 Days
Aggregated Means and Standard Deviations

	English Classes Experimental Group		Social Studies Experimental Group	
	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	1.09	.70	1.01	.74
Posttest	1.10	.94	1.25	.82
Follow-up	1.26	.71	1.48	.79
	N=48		N=51	

Summary of Section Two

The purpose of this section has been to determine whether any appreciable differences could be noted between the effectiveness of the program situated in social studies classes versus the program situated in English classes. The results of repeated measures ANOVAS reported here indicate that students in the English classes learned significantly more factual material than students introduced to the same material in the social studies classes.

Self-perceptions of increased abilities and skills to resist pressures did not differ between the two groups, however. In regard to effects upon behavior, students in the English classes reported less increase in frequency of drinking from pretest to posttest, as well as from pretest to follow-up. There were no significant differences between the two experimental groups in regard to the onset of drinking, amounts consumed at the last party, and frequency of riding with a drinking driver.

If the final evaluation of the relative sites rests on the outcomes reported in these analyses, the English classrooms seem to provide the most effective learning milieu for the resistance program.

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